



## A Structure Equation Modeling of Guidelines on Effective Meeting Management in Industrial Business Sector

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### Abstract

The purposes of this research were to investigate guidelines on effective meeting management in different sizes of industrial business corporates, and to develop a structure equation model based on those found guidelines. Quantitative and qualitative research methods were employed in this study. The quantitative data were obtained from interviewing 500 employees responsible for business meeting arrangement. Investigated guidelines on effective meeting management in industrial business sector were of 4 aspects; namely, meeting leader, pre-meeting operation, meeting operation, and post-meeting operation. Most important guidelines respectively found in each aspect were: punctuality had to be strictly observed, meeting chairperson had to check and recheck the agenda to get ready for the meeting, attendees should honor and respect each other when expressing opinions, and the meeting secretary had to send the minutes of the previous meeting to the participants allowing them to have enough time to consider the resolutions before the next meeting. For the hypothesis testing, it was found that all sizes of industrial business similarly recognized the importance of the guidelines on effective meeting management in the industry sector. The analysis of the developed structure equation model showed that it was in accordance and in harmony with the empirical data and passed the evaluation criteria. Its Chi-square probability level, relative Chi-square, goodness of fit index, and root mean square error of approximation were 0.149, 1.139, 0.970, and 0.017 respectively. The statistical significance of this study was set at 0.05.

**Keywords:** Structure equation modeling, Effective meeting, Industrial business

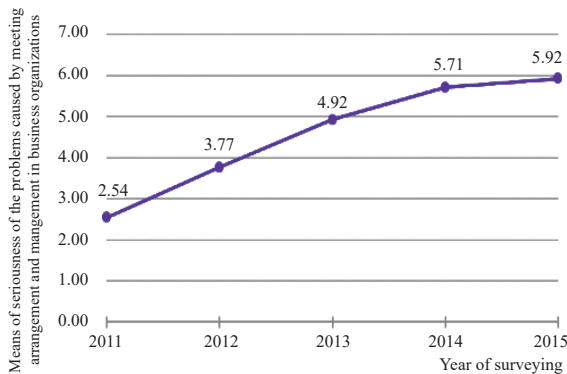
### 1 Introduction

Presently, every organization places an importance on utmost effective business management, making a full use of resources, and reducing impacts on society and environment all of which need good management in every aspect including those in human resources, financial fluidity, production capital, as well as adjustment of organization size for agility or development of management process to get ready for future competitions and changes. Information and resolutions in organization management are mostly obtained from brainstorming of

every involved parties through the process of meetings. Sharing ideas and experiences, planning, strategy building or even solving various problems usually occur in meetings.

Meeting is defined as an assembly of individuals called to debate certain issues and to work together in order to achieve the goal of organization [1]. It is considered to be very important for every organization. A good meeting can promote better decision making, better planning, and following up of work assignments. Effective meetings can make organizations more effective in turn.

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**Figure 1:** Tendency of means of seriousness of problems related to meeting arrangement and management in industrial business organizations [2].

It is necessary for industrial business organizations to hold meetings when having many departments work together so that employees can exchange ideas, knowledge and experiences. Top management can transfer their ideas to those at the bottom and at the same time, learn more opinions of employees in different departments, reducing conflicts and being able to use them for making decision. Format and objectives of meetings usually vary.

Elements of each meeting include chairperson, committee members, secretary, agenda, and minutes of meeting. Failure of meeting can be caused by one or more elements [2]. Which elements cause the failure of the meeting, therefore, needs to be considered separately even though all are involved.

According to a research report of Faculty of Business Administration [3], a survey of management problem level in Provincial Chambers of Commerce were undertaken during 2011–2015 and it was found that the problems related to meeting arrangement and management in business corporates were considered important and needed to be urgently solved (Figure 1). In the mentioned survey, data were collected from 200 past and present administrators of Provincial Chambers of Commerce. It was found that meeting arrangement and management problems tended to continuously increase since 2011 to 2015. The means of each year's problems were 2.54, 3.77, 4.92, 5.71, and 5.92 respectively.

According to the importance and the problems mentioned above, it can be seen that ineffective meeting arrangement can cause many problems to

organization management, and they may grow bigger if corporates cannot solve them, and make the meetings more effective.

It was, therefore, necessary to find guidelines to enhance meeting arrangement and management in industrial business organizations to be more effective, which will result in huge reduction of human resources, time, budget, and management capital. It will eventually increase the effectiveness of management in turn. The purposes of this study were to investigate guidelines on effective meeting arrangement in different sizes of industrial business corporates, and to develop a structure equation model based on those found guidelines.

## 2 Related Literature

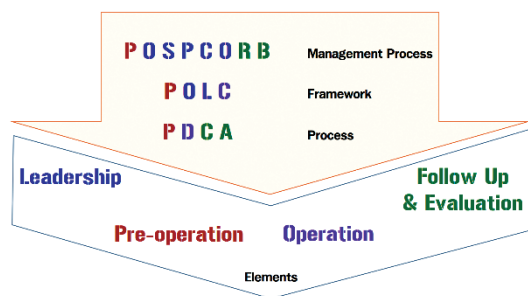
Management principles were investigated and analyzed to find out elements of meeting management in order to eventually provide guidelines on industrial business corporates to arrange meetings more effectively.

Gulick and Urwick [4] presented a well-known concept of management process called “POSDCoRB,” stating that 7 important duties of administrators were planning, organizing, staffing, directing, coordinating, reporting, and budgeting.

Allen [5] applied 4 rules (POLC) to management; namely, planning, organizing, leading, and controlling all of which, specifically, leading [6] were very vital in the present management,

Deming's PDCA management principles [7], a so-called Deming Cycle, or Shewhart Cycle, is a cycle that controls quality. It consists of 4 stages; plan (P), do (D), check (C), and act (A). When a plan is laid, it is then implemented in the Do stage during which the checking can be made and if any problems arise, solving and improvement can be done simultaneously in the Act stage. The improvement can then be started with planning and go on around the lube of the PDCA.

Structural Equation Modeling (SEM) [8] is a statistical technique for multi variables, used for analysing structure relationships, factors, multiple linear regression, and the relationship of measured variables, and latent factors. SEM is widely needed by researchers because it can assess many things in just one analysis. Two kinds of variables are needed in the analysis; namely, endogenous latent variables comparable to independent variables, and exogenous latent variables comparable to dependent variables.



**Figure 2:** Elements of guidelines on effective meeting management in industrial business sector [4]–[6].

According to the investigated concepts and theories, it can be concluded that there are 4 elements of effective meeting management in industrial business sector; namely, leader, pre-meeting operation, meeting operation, and post-meeting operation as shown in Figure 2. In order to follow the style of this Journal, the paper's title, authors' names and affiliations should follow the format exactly as shown above.

### 3 Research Methodology

This research is for creating new knowledge body, using mix-techniques. There are 3 parts of it, starting with qualitative research employing in-depth interview technique, followed by quantitative research, and ending with another qualitative research employing focus group technique to confirm the correctness of the constructed model. The research methodology were as follows:

- The constructed questionnaire was synthesized via in-depth interviewing 9 experts. Four elements of interviewing guidelines were imposed; namely, leader, pre-meeting operation, meeting operation, and post-meeting operation. The questionnaire was of an open-ended type.

- The content obtained from the interview was analysed to form questions in the questionnaire that was divided into 5 parts.

**Part 1:** Respondent's demographic data. (5 items)

**Part 2:** General information of industrial business organization. (5 items)

**Part 3:** Characteristics of effective meeting management in industrial business sector. (22 items)

**Part 4:** Guidelines on effective meeting management in industrial business sector. The questionnaire was

of a rating scale type. Four aspects were asked. There were 25 questions in each aspect.

**Part 5:** Additional comments on effective meeting management in industrial business sector. Two open-ended questions were put in this part.

The questionnaire draft was validated and assessed by the experts. Index of Item-Objective Congruence value (IOC) was calculated. When the questionnaire passed the criteria, it was tried out with an experimental group of 30 people to find out its discrimination and reliability. The values obtained ranged from 0.326 to 0.811 for the discrimination and 0.980 for the reliability.

- The data were collected by interviewing 500 samples in charge of meeting arrangement for industrial business corporates, using the questions in the questionnaire. Two hundred and fifty samples were from small and medium business and the other 250 were from the large one.

- Descriptive and referential statistics were used to analyse the data. Frequency, percentage, mean, and standard deviation were used to analyse the structure equation model while the relationship between elements was tested, using t-test. The statistical significance level of this study was set at 0.05. SEM was used to develop the structure equation model.

- The SEM-constructed model was assessed by the professionals, using focus group. The results were summarized.

### 4 Results of the Study

According to the analysis of the data, the results of the research could be summarized as follows:

- Guidelines on effective meeting management in industrial business sector in terms of sizes of organizations:

1. The respondents' demographic data: Most were female of 30–39 years old, obtaining bachelor's degree, having less than 5 years experience in meeting arrangement, and working in personnel management department.

2. General conditions of business organizations investigated. Most were in operation for less than 10 years, being in other business type group (most were in automobile industry). Their organizations used to be awarded some kinds of rewards or quality standard.

3. Due to the meeting characteristics, the frequency

of board meeting was once a month. In each meeting, 2–3 personnel arranged the meeting, and 6–10 committee members attended. Date of the meeting was fixed on Monday at 09.00–12.00 am. Duration of the meeting was about 3 hours. The venue was in the room specifically provided for the event. The reason for using the specific room was for convenience. Most corporates did not pay any meeting allowance. Meeting appointment was made one at a time and most were scheduled, depending on the agenda. Invitation to each meeting and delivery of meeting documents were made in advance via email. LED projector was used the most in every meeting. Snack sets were ordered from outside, and served with provided drinks. Budget for snack was 100 baht upward per head. For those who did not attend the meeting or those who came late regularly, the chairperson would ask them to cooperatively come on time. Opening and closing time of the meeting was made clear. In case that participants brought other work to do in the meeting room, the chairperson would ask them not to do so. After each meeting, the chairperson would assess it, taking the participants’ opinions into account. Problems always occurring during the meeting was that the participants did not give any comments.

4. It was found as a whole that the level of importance of guidelines on effective meeting management in industrial business sector in all 4 aspects was at a high level. When the by-aspect was taken into consideration, the first three utmost important issues rated in each aspect are presented as follows:

- a) With respect to meeting leaders; the importance was placed on punctuality, control of themselves not to favour anyone side, and treating participants equally.
- b) Due to the pre-meeting operation, the most

important issues were that the chairperson had to check the agenda before the meeting to get ready for the event, ask the participants to propose related agenda, and fix schedule to meet with the agenda.

c) As for meeting operation, the items rated most important were that the participants had to give comments in a respectful manner; presentation, debate, discussion had to be based on reality; every participant’ comments had to be paid attention to.

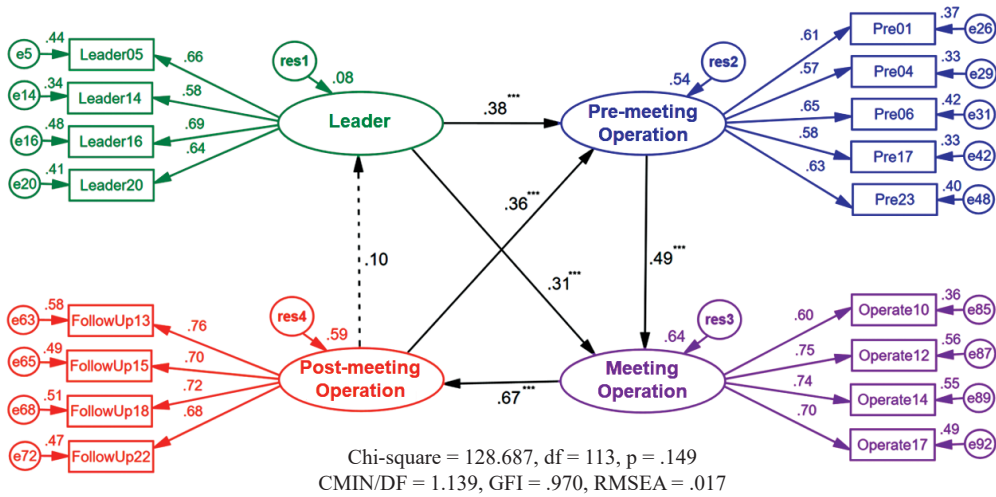
d) As for post-meeting operation, the importance was placed on that the secretary sent the minutes of the previous meeting to the attendees so that they had enough time to consider the resolutions before the next meeting; the secretary typed the minutes and checked its accuracy and completeness before submitting to the chairperson; and the secretary had to use technology to help filing, and searching for data and resolutions of each meeting.

5. The comparison of the important level of guidelines on effective meeting management among different sizes of industrial business corporates, using t-test to compare the means of the 2 independent population, revealed, both as a whole and the by-aspect, no differences at the statistical significance level of 0.05 (Table 1).

- For the structure equation model of guidelines on effective meeting management in industrial business sector, the researcher had modified it taking into consideration the modification indices and had taken out inappropriate observed variables, one by one, until the desirable model was in accordance with the empirical data and passed all 4 criteria of the statistics as shown in Table 2 and the model itself was shown in Figure 3 while the variables and their meaning was shown in Table 3.

**Table 1:** The comparison of the important level of guidelines on effective meeting management among different sizes of industrial business corporates

Guidelines on Effective Meeting Management in Industrial Business Sector		Small and Medium Size		Large Size		t-Value	p-Value
		$\bar{X}$	SD.	$\bar{X}$	SD.		
<b>As a whole</b>		<b>4.09</b>	<b>0.39</b>	<b>4.13</b>	<b>0.41</b>	<b>-1.12</b>	<b>0.26</b>
1	Leader	4.23	0.41	4.22	0.43	0.19	0.85
2	Pre-meeting operation	4.03	0.48	4.08	0.47	-1.11	0.27
3	Meeting operation	4.09	0.44	4.16	0.49	-1.67	0.10
4	Post-meeting operation	3.98	0.48	4.04	0.51	-1.17	0.24



**Figure 3:** Structure equation model of guidelines on effective meeting management in industrial business sector in standardized estimated mode after being modified.

**Table 2:** The comparison of the statistic values obtained from the congruence assessment of the model before and after being modified

Statistic Values	Criteria	Before Modification	After Modification
p of Chi-Square	More than 0.05	0.000	0.149
CMIN/DF	Less than 2	2.431	1.139
GFI	More than 0.90	0.632	0.970
RMSEA	Less than 0.80	0.054	0.017

**Table 3:** The meaning of the variables shown in Figure 3

Variables	Meaning
Leader05	Being discreet and re-thinking before speaking.
Leader14	Controlling oneself not to favor anyone side.
Leader16	Having skills in speaking and summarizing issues, making them easy for the others to understand.
Leader20	Being clear in the process of thinking and making decision with reasons.
Pre01	The meeting is prepared according to the schedule set by the organization policy.
Pre04	The appropriateness of meeting format, participants, venue, and facilities are considered.
Pre06	The secretary notifies the person who has to present or clarify the agenda to be prepared.
Pre17	Special seats are provided for those who come for clarification or additional information.
Pre23	The secretary reports to the chairperson on the agenda and the information provided for each agenda.
Operate10	The chairperson gives the participants opportunities to express and finish their opinions before questioning or concluding.
Operate12	Meetings are constructive and not emotional.
Operate14	The participants must comment with respect to each other.
Operate17	In case of suspecting or being unsure about any matters, the participants should ask for clarification before arguing or disagreeing.
FollowUp13	The chairperson checks the minutes to confirm its accuracy, completeness, and relevancy.
FollowUp15	The secretary delivers the resolutions of the meeting to the people involved for implementation or practice.
FollowUp18	The secretary files documents systematically.
FollowUp22	The secretary provides agenda for the next meeting. The continuation of any resolutions must be put in the sequel agenda.

## 5 Summary and Discussion

Structure equation model of guidelines on effective meeting management in industrial business sector is recognized in every corporates because it can help carrying on the meeting to meet the desired objectives. Moreover, it can help management to shape the meeting suitable for organizations. The results of this study led to 8 major issues deserved to be summarized and discussed as follows:

- The result of the research indicated that industrial business corporates placed the importance on the aspect related to meeting leaders of the meeting more than the others.

Allen [5] had applied POLC method, an important principle, to management to make it most effective. Robbins and Counter [6] found that leadership of leaders was inevitably necessary for current management. It helped to encourage employees to willingly work and accomplish it. A good administrator was the one who was able to accomplish works without having to do them himself. He could use his leadership to motivate his supervisees to be enthusiastic and willingly work hard for the organization achievement as planned. And the most important thing was that he had to monitor and evaluate whether those works met the laid action plan and achieved the strategic objectives or not. This is no exception to meeting management. The effectiveness of meetings depends very much on the meeting leaders.

- When a comparison of guidelines on effective meeting among small, medium and large industrial businesses was made, it was found as a whole and a by-aspect that they were not different because all of them had similar directions for meeting management. In each meeting, the leaders were treated as a key person. This was in accordance with Odermatt *et al.* finding [9] that leader's behaviour was an index of meeting achievement.

- According to the hypothesis test, it was found that the factor related to leaders directly affected that of the pre-meeting operation.

Problems frequently occurring before the meeting started were that it could not start on time; participants neither had positive attitudes towards the meeting, recognized its importance, nor expected anything from it. An ineffective meeting was always caused by unwell planning, that is, the leader did all the jobs and did not

listen to participants, making them not pay attention to the preparation and the meeting itself, and less participated in the meeting [10]. Thus the leader should have skills in speaking and summarizing to make the participants understand the issues easily, feel being a part of the meeting, and so being well prepared for the next meeting.

- The result of another hypothesis test revealed that the factor related to the post-operation of the meeting did not directly affect that related to the leader.

The meeting secretary had to submit the drafted minutes of the meeting to the chairperson after the meeting. The minutes needed to be checked by many involved persons, i.e. The draftsman let the examiner check it before having it rechecked and endorsed by the chairperson. The secretary, then, distributed copies of the minutes or the resolutions to every participant and the people involved for acknowledgement and practice. In addition, the secretary had to file the minutes for future reference [11]. It is, therefore, concluded that the secretary's job is to provide the minutes and the resolutions for those involved while the leader's is just to approve the proposed documents.

- According to another hypothesis test, it was found that the factor related to the post-meeting operation directly affected that related to the pre-meeting operation.

The chairperson of the meeting or the authorized person had to follow up the implementation of works as well as to provide resources and facilities for those who were working so that they could accomplish their jobs. Real authority should be given to the authorized. If provision of any resources or facilities could not be made, leaders should give clear explanation and reasons, and try to find some other ways to help them solve the arising problems, otherwise the employees might be frustrated and could not do the assigned job successfully. So after the meeting, the leaders should check the minutes of the meeting and confirm its correctness, completeness, and relevancy so as to be ready for the next meeting approval.

- Another hypothesis test indicated that the factor related to the meeting leader directly affected that related to the meeting operation.

Participants' assessment of the meeting is very important [12] and so it is necessary for the meeting leader to interact with as many participants as possible. In addition, as one's perception of environment

promotes better attitudes, perceptions of employees' feelings in the meeting may signify their attitudes and behaviours affecting meeting participation or support of participation, and eventually the achievement of the meetings as well. Finding the way to enhance the participants' positive experience of meetings may help the operation of the meeting to be easier and faster.

- Another hypothesis proved to be true was that the pre-meeting operation had a direct influence on its operation.

Problems arising during the meeting can be caused by unclear objectives of the meeting; participants neither preparing for the meeting, knowing their role and duty, nor knowing the expectation of the meeting all of which can result in inappropriate preparation of information, venue, and the meeting schedule [10]. It is suggested that agenda be provided before the meeting no matter how many objectives are set. With respect to the preparation of the agenda, those who are in charge must be prepared to answer the questions: What will each agenda be arranged to make the meeting most effective? Who are participants? Who should be allowed to show up in which agenda? [13], [14] There may be more problems arising during the meeting such as off-topic discussions, interruptions, taking too long for each topic, participants not expressing opinions because they do not want to bring about conflict, and participants not being authorized to make decision [10]. The leader must, consequently, motivate and encourage the participants to express their opinions creatively, and not to be emotional in making mutual decision.

- The hypothesis that the operation of the meeting directly affected the post-meeting operation was also proved true.

The problems usually occurring after the meeting include that the participants felt that their proposal would not be put into practice, or the work assigned in the meeting could not be accomplished [10]. The meeting leader is suggested to rapidly accomplish what is assigned in the meeting in order to exhibit the potential of himself as a leader and as a good example of having implemented the assigned work according to the meeting resolutions [11]. Any involved people assigned to do anything should be asked about their concerned limitations, problems, and obstacle before implementation of the assignment to make sure that they understand and can accomplish it.

## 6 Conclusions

It was found in this study that effective meetings in industrial business sector could help the involved to know their roles, duties, and so could form a better plan for each meeting, not spending too much time that can affect participants' thinking and emotion as well as the organizational image. Different sizes of business have different format of implementation. Study of causal influence of structure equation modelling of guidelines on effective meeting management of specific type of industrial business is recommended so that specific guidelines can be obtained for the benefits of a specific business.

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